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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,684	04/21/2004	Mark M. Morita	066243-0248 (141451)	4469
7590 07/18/2007 Joseph D Kuborn ANDRUS SCEALES STARKE & SAWALL 100 East Wisconsin Avenue Suite 1100 Milwaukee, WI 53202			EXAMINER ULRICH, NICHOLAS S	
			ART UNIT 2173	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/828,684

Applicant(s)

MORITA ET AL.

Examiner

Nicholas S. Ulrich

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 April 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5-7,10,11,14,16,18,20,21,23-27,29 and 31-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-7,10,11,14,16,18,20,21,23-27,29 and 31-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 4/24/2007.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1, 3, 5-7, 10, 11, 14, 16, 18, 20, 21, 23-27, 29, and 31-46 are pending.
2. Claims 35 - 46 have been added.
3. Claims 1, 3, 5, 6, 7, 10, 11, 16, 18, 20, 24, 26, 27, 29, 31, 32, 33, and 34 have been amended.
4. Claims 2, 4, 8, 9, 12, 13, 15, 17, 19, 22, 28, and 30 have been cancelled.
5. Claims 1, 3, 5-7, 10, 11, 14, 16, 18, 20, 21, 23-27, 29, and 31-46 are rejected.
6. The information disclosure statement (IDS) submitted on 4/24/2007 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Objections***

7. Claim 25 is objected to because of the following informalities: In the amendments to claims filed 4/24/2007, claim 25 is labeled as "Currently Amended" but no changes have been made on the claim from the original filed claims on 4/21/2004. Appropriate correction is required.
8. Claims 44 and 45 are objected to because of the following informalities: Claims 44 and 45 appear to be duplicate claims. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roehrig et al. (US 2002/0097902 A1) in view of Ema et al. (US 5779634).

In regard to **claim 1**, Roehrig discloses a method of displaying a number of computer-detected regions of pathological interest of an anatomical feature, the method comprising:

displaying an image of the anatomical feature (*Fig 10 element 1055 and Paragraph 0057 line 5: The annotation map discussed by Roehrig is a anatomical representation of a breast*);

displaying a first indication associated with each marker indicative of the probability that the region of the pathological interest is cancerous (*Paragraph 0065: colors are used to express the probability of cancer for each marker*);

and a second indication associated with each marker indicative of a classification of the region of pathological interest (*Paragraph 0009 lines 24-30: discussed is two different kinds of markers used to specify information regarding the features of the suspected abnormalities. Discussed are classifying abnormalities as either cluster micro calcifications or mass*).

While Roehrig teaches displaying regions of pathological interest of an anatomical feature, Roehrig fails to show simultaneously displaying with the image a uniquely identified marker corresponding to each computer-detected region of pathological interest.

Ema teaches displaying computer-detected abnormalities similar to that of Roehrig. In addition, Ema further teaches unique identifiers corresponding to each region of pathological interest (*Column 49 lines 8-22*).

It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig and Ema before him at the time the invention was made, to modify the displaying of regions of pathological interest of an anatomical feature taught by Roehrig to include unique identifiers of Ema, in order to obtain displaying regions of pathological interest of an anatomical feature with unique identifiers for each region of pathological interest. It would have been advantageous for one to utilize such a combination in order to reference and label regions of pathological interest, as taught by Ema (*Column 49 lines 12-13*).

In regard to **claim 3**, Roehrig teaches wherein the probability of cancer for each region of pathological interest is determined by a computer-implemented detection algorithm (*Paragraph 0055: output of the classifier sub-stage is usually the probability information of the detected abnormalities*).

In regard to **claim 5**, Roehrig teaches wherein the first indication comprises the color of each marker visually indicating the probability of cancer determined by the computer-implemented detection algorithm (*Paragraph 0065*).

10. Claim 6, 7, 10, 11, 16, 18, 20, 21, 23 – 27, 29, 31-41, and 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roehrig et al. (US 2002/0097902 A1) in view of Ema et al. (US 5779634) and Rogers (US 6970587 B1).

In regard to **claim 10**, Roehrig discloses a method of interactively displaying a number of unique locations of pathological interest of an anatomical feature, the method comprising:

displaying an image of the anatomical feature (*Fig 10 element 1055 and Paragraph 0057 line 5: The annotation map discussed by Roehrig is a anatomical representation of a breast*);

While Roehrig teaches displaying regions of pathological interest of an anatomical feature, Roehrig fails to show simultaneously displaying with the image a uniquely identified marker corresponding to each computer-detected region of pathological interest.

Ema teaches displaying computer-detected abnormalities similar to that of Roehrig. In addition, Ema further teaches unique identifiers corresponding to each region of pathological interest (*Column 49 lines 8-22*).

It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig and Ema before him at the time the invention was made, to modify the displaying of regions of pathological interest of an anatomical feature taught by Roehrig to include the unique identifiers of Ema invention, in order to obtain displaying regions of pathological interest of an anatomical feature with unique identifiers for each region of pathological interest. It would have been advantageous for one to utilize such a combination in order to reference and label regions of pathological interest, as taught by Ema (*Column 49 lines 12-13*).

Further, Roehrig and Ema fail to disclose "receiving a first user-input command that selects one of the uniquely identified markers for classification", "displaying a menu of user-selectable classification alternatives in response to the first user-input command, the classification alternative representing physiological assessment of the region of pathological interest", "receiving' a second user-input command that selects one of the user- selectable classification alternatives" and "modifying the visual appearance of the displayed marker in response to the classification alternative selected by the second user-input command".

However, Rogers discloses a method of receiving a first user-input command that selects one of the identified markers for classification (*Column 22 lines 16 -19: Rogers specify the selection for removal of the marker but it should be understood that this is only one embodiment and the same selection could be used for selecting a marker to add classification data*);

displaying a menu of user-selectable classification alternatives in response to the first user-input command (*Column 21 line 2: pull down menu*);

receiving a second user-input command that selects one of the user-selectable classification alternatives (*Column 20 line 65 to Column 21 line 8: It should be understood that the operation of pull-down menu's are well known in the art and it is inherently shown in Rogers disclosure that a second user input would be required to select the particular classification from within the drop down menu*);

Roehrig, Ema, and Rogers are analogous art because they are both from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger and Ema to Roehrig invention because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification.

Roehrig, Ema, and Roger fail to disclose modifying the visual appearance of the displayed marker in response to the classification alternative selected by the second user-input command. However, Roehrig teaches indication associated with each marker indicative of a classification of the region of pathological interest (*Paragraph 0009 lines 24-30*) and Roger teaches a user selecting classification alternatives (*discussed above*). Therefore it would be obvious when combining Roehrig, Ema, and Roger to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would



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maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

In regard to **claim 11**, the unique identifier as taught by Ema in the rejection of claim 10, further includes an alphanumeric label adjacent to the marker (*Column 49 lines 8-22*). The motivation to combine is the same as discussed for rejection of claim 10.

In regard to **claims 16 and 21**, System claim 16 and 21 corresponds generally to method claim 10, and recites similar features in system form, and therefore is rejected under the same rationale.

In regard to **claim 18**, Roehrig discloses the system wherein each marker is configured to be electronically stored the same image layer as the image of the anatomical feature in the storage media (*Paragraph 0047 lines 10-12*).

In regard to **claim 20**, Roehrig and Ema fail to disclose viewable classification data entered includes a user-determined classification of the computer-detected region as a false-positive detection. However, Rogers discloses viewable classification data includes a user selection of the classification data from an electronically displayed menu of alternative classifications wherein one of the menu options is for inputting

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classification of the computer-detected region as a false-positive detection (*Column 20 line 65 to Column 21 line 8*).

Roehrig, Ema, and Rogers are analogous art because they are all from the same field of endeavor of computer aided abnormality detection in medical imaging.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger to Roehrig invention because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification

In regard to **claim 23**, Roehrig discloses the system wherein the Computer-implemented detection algorithm determines a probability of cancer for each region of pathological interest (*Paragraph 0055: output of the classifier sub-stage is usually the probability information of the detected abnormalities*).

In regard to **claim 24**, Roehrig discloses the system wherein each marker visually indicate the probability of cancer determined by the computer-implemented detection algorithm (*Paragraph 0065*).

In regard to **claim 25**, Roehrig discloses the system wherein the color of each marker visually indicates the probability of cancer determined by the computer-implemented detection algorithm (*Paragraph 0065*)

In regard to **claims 26 and 29**, Roehrig discloses a marker for use with a graphical user interface for uniquely identifying a location of pathological interest, the marker comprising:

a visual indication of the probability of cancer for the location of pathological interest *Paragraph 0065: colors are used to express the probability of cancer for each marker*);

While Roehrig teaches displaying regions of pathological interest of an anatomical feature, Roehrig fails to show simultaneously displaying with the image a uniquely identified marker corresponding to each computer-detected region of pathological interest.

Ema teaches displaying computer-detected abnormalities similar to that of Roehrig. In addition, Ema further teaches unique identifiers corresponding to each region of pathological interest (*Column 49 lines 8-22*).

It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig and Ema before him at the time the invention was made, to modify the displaying of regions of pathological interest of an anatomical feature taught by Roehrig to include unique identifiers of Ema, in order to obtain displaying regions of pathological interest of an anatomical feature with unique identifiers for each region of pathological interest. It would have been advantageous for one to utilize such a combination in order to reference and label regions of pathological interest, as taught by Ema (*Column 49 lines 12-13*).

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Further, while Roehrig teaches a visual indication of classification data *(Paragraph 0009 lines 24-30: discussed is two different kinds of markers used to specify information regarding the features of the suspected abnormalities. Discussed are classifying abnormalities as either cluster micro calcifications or mass)*, Roehrig and Ema fail to teach based on user input.

However, Roger teaches displaying a menu of user-selectable classification alternatives in response to the first user-input command *(Column 21 line 2: pull down menu)*;

receiving a second user-input command that selects one of the user-selectable classification alternatives *(Column 20 line 65 to Column 21 line 8: It should be understood that the operation of pull-down menu's are well known in the art and it is inherently shown in Rogers disclosure that a second user input would be required to select the particular classification from within the drop down menu)*;

Therefore it would be obvious when combining Roehrig, Ema, and Roger to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

In regard to **claims 27 and 40**, the unique identifier as taught by Ema in the rejection of claim 26, further includes an alphanumeric label adjacent to the marker (*Column 49 lines 8-22*). The motivation to combine is the same as discussed for rejection of claim 26.

In regard to **claims 6, 31-34 and 38**, Roehrig and Ema fail to disclose wherein the viewable classification data includes false positive, cyst, and nodule.

However, Rogers discloses wherein the viewable classification data includes a user-determined classification region as false positive, a micro calcification, a cyst, or a nodule (*Column 20 line 65 to Column 21 line 8, Fig 41, and Column 21 line 4: Classification information can include type of lesion. A cyst, micro calcification, and a nodule can be considered types of lesions*).

Roehrig, Ema, and Rogers are analogous art because they are both from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger to Roehrig invention because one of ordinary skill in the art would be motivated to allow a user to specify the type of lesion that the marker corresponds to.

In regard to **claims 35, 36, 41, 43, and 46**, Roehrig and Ema both fail to disclose wherein the user enters the classification of the region of pathological interest and wherein the classification of the region of pathological interest is a physiological

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assessment of the region of pathological interest. Rogers teaches displaying computer-detected abnormalities similar to that of Roehrig and Ema. In addition, Rogers further teaches a user enters classification of the region of pathological interest (*Fig 35 element 1660*) and the classification of the region is a physiological assessment (*Column 20 line 65 to Column 21 line 8*);

Roehrig, Ema, and Rogers are analogous art because they are all from the same field of endeavor of computer aided abnormality detection in medical imaging.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger, Ema, and Roehrig because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification.

In regard to **claims 37, 44, and 45**, Roehrig discloses wherein the second indication comprises the shape of each marker visually indicating the classification of the region of pathological interest (*Paragraph 0009 lines 24-30: discussed is two different kinds of markers used to specify information regarding the features of the suspected abnormalities. Star and triangle*).

In regard to **claims 7 and 39**, While Roehrig teaches a visual indication of classification data (*Paragraph 0009 lines 24-30: discussed is two different kinds of markers used to specify information regarding the features of the suspected*

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*abnormalities. Discussed are classifying abnormalities as either cluster micro calcifications or mass), Roehrig and Ema fail to teach based on user input.*

However, Roger teaches displaying a menu of user-selectable classification alternatives in response to the first user-input command (*Column 21 line 2: pull down menu*);

receiving a second user-input command that selects one of the user-selectable classification alternatives (*Column 20 line 65 to Column 21 line 8: It should be understood that the operation of pull-down menu's are well known in the art and it is inherently shown in Rogers disclosure that a second user input would be required to select the particular classification from within the drop down menu*);

Therefore it would be obvious when combining Roehrig, Ema, and Roger to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

11. Claims 14 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roehrig et al. (US 2002/0097902 A1) in view of Ema et al. (US 5779634), Rogers (US 6970587 B1), and Ozaki et al. (US 2006/0050943 A1).

In regard to **claims 14 and 42**, while Roehrig teaches using a visual indicator of the marker to show classification data (*Paragraph 0009 lines 20-30*), Roehrig fails to disclose changing the color the visual appearance of marker based on user classification.

While Ema teaches displaying regions of pathological interest on an anatomical figure, Ema fails to disclose changing the color of the visual appearance of the marker based on user input.

While Rogers teaches a user modifying classification data, Rogers fails to disclose changing the color of the visual appearance of the marker based on user classification.

Ozaki teaches displaying regions of pathological interest on an anatomical figure similar to that of Roehrig, Rogers and Ema. In addition, Ozaki teaches representing the classification of region of pathological interest on a anatomical figure using color (*Paragraph 0090*).

Therefore it would be obvious to one skilled in the art at the time of invention to combine Roehrig, Ema, Roger, and Ozaki to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig and Ozaki inventions to display classification data to the user by showing visual indications.



***Response to Arguments***

12. Applicant's arguments with respect to claims 1, 3, 5-7, 10, 11, 14, 16, 18, 20, 21, 23-27, 29, and 31-46 have been considered but are moot in view of the new ground(s) of rejection.

13. Applicant's arguments filed 4/24/2007 have been fully considered but they are not persuasive.

With respect to the combination of Roehrig and Rogers not providing motivation to change the appearance of a marker to represent user selected classification data.

Roehrig, Ema, and Rogers were combined in the rejection of the independent claims of the present invention. The examiner would like to discuss why it would be obvious to use these references to cover the limitation of changing the visual appearance of a marker based on user classification. The sources are combinable because they are from the same field of endeavor of displaying regions of pathological interest on an anatomical figure. Roehrig discusses having different shapes of markers to define different classifications of the markers. Rogers discusses the ability to select a marker and change or add classification data to the marker. Since Roehrig displays a visual indication of the classification of the marker, it would be obvious to one skilled in the art when combining Roehrig and Rogers invention to also update the visual indication of the classification of the marker with respect to user input updating or

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setting the classification of the marker. This would maintain an important aspect of Roehrig invention where the marker visually indicates the classification of the specified marker.

With respect to the argument where it would not be obvious for one of ordinary skill in the art to combine the Ozaki reference with the Roger and Roehrig references.

The examiner disagrees.

Ozaki may be directed towards a computer-aided detection system itself, while Roehrig, Ema, Rogers, and the present invention are directed towards annotation of the images resulting from a computer-aided detection system. This would not render the inventions un-obvious to combine. The references are combinable based on the fact that all of them are directed towards displaying regions of pathological interest on an anatomical figure. It is irrelevant whether the references are describing the computer-aided detection system itself or the annotation of the images resulting from a computer-aided detection system.

***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

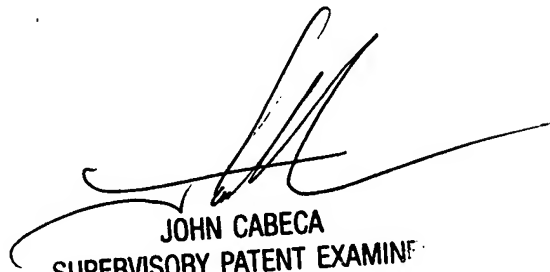
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas S. Ulrich whose telephone number is 571-270-1397. The examiner can normally be reached on M-TH 9:00 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on 571-272-4048. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nicholas Ulrich  
6/26/2007  
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